SCIENCE & GOVERNMENT REPORT

14th Year of Publication

The Independent Bulletin of Science Policy

Volume XIV, Number 3 | P.O. Box 6226A, Washington, D.C. 20015 | February 15, 1984

Defense Dominates Huge Boost in R&D Budget

The Reagan Administration has proposed another bountiful budget for research and development, which more than ever it seems to regard as the nation's key card in military and industrial competition.

Defense R&D is the biggest gainer, rising by 22 percent, to a total of $34 billion in fiscal 1985—a colossal sum that is unlikely to survive Congressional scrutiny.

Basic research, a one-time political orphan that has become the shared darling of Congress and the White House, is budgeted for a 10-percent increase, bringing the amount to $7.9 billion.

The Perils of Pork-Barreling: Funds Blocked for 2 Labs—Page 4

The National Science Foundation's budget benefits by a jump of 14 percent from that basic-research increase, and its budget goes to $1.4 billion.

But only an inflation-matching 5 percent is added to the budget of the National Institutes of Health, obviously in expectation of Congress performing in its usual role of benefactor of biomedical research.

NASA, having at long last paid off the Space Shuttle's R&D overruns, will have some "new" money for various programs, despite an overall budget increase of only 2 percent. The agency's budget, totaling $3.3 billion, includes a 16-percent increase for basic research, plus $150 million for "design and definition of a space station"—a venture on which Congressional sentiment is yet to jell.

The Department of Energy is budgeted for only a 1-percent increase, bringing the total to $4.9 billion, but that will still provide for an 18-percent increase in the "hard" basic sciences so favored by the Administration.

And the Department of Agriculture's various research categories are up by 3 percent, to $898 million. That figure includes $50 million for competitive

(Continued on page 2)

Where the Money Goes

(in millions of dollars)

Department or agency	Obligations		
	1983 actual	1984 estimate	1985 estimate
Defense	22,925	27,636	33,852
Energy	4,491	4,844	4,885
Health, Human Services	4,348	4,859	4,950
NIH	(3,788)	(4,240)	(4,342)
NASA	2,570	3,257	3,341
NSF	1,062	1,239	1,408
Agriculture	846	872	898
Transportation	360	519	498
Interior	374	415	363
Commerce	327	357	272
EPA	241	250	281
AID	177	225	264
VA	164	223	198
Nuclear Regulatory Com	207	191	168
All other[1]	338	393	396
Total	38,431	45,279	51,776

[1] Includes the Departments of Education, Justice, Labor, Housing and Urban Development and Treasury, the Tennessee Valley Authority, the Smithsonian Institution, the Corps of Engineers and the Federal Emergency Management Agency.

In Brief

The swelling role of military money in American R&D is revealed in a table in the President's new budget. As recently as 1979, defense R&D was budgeted for $13.6 billion, civilian R&D for $14.5 billion. For fiscal 1985, defense R&D (in DoD plus other agencies) is set at $35.9 billion, civilian R&D at $15.9 billion.

With all that money at its command, the Pentagon is making a comeback as a major supporter of basic research, most of it in universities. Its basic-science budget is set at $939 million next year—a 15-percent increase over the present annual sum. That puts it within hailing distance of NSF, which is budgeted for $1.3 billion for support of basic research next year.

With confusion reigning about the ground rules for attending unclassified but so-called sensitive scientific meetings in the US, complaints are mounting from foreign researchers concerning rising barriers to meetings that were formerly open and easy to attend. According to one official, US authorities, by one means or another, have been creating difficulties for foreign researchers in electronics, material sciences, and biotechnology.

The US and Spain are setting up a cooperative program in basic research. To be administered by NSF on the US side, the program will be financed from funds available through the US-Spain Agreement on Friendship, Defense, and Cooperation. For additional information: Kenneth Hannock, Division of International Affairs, NSF, 1800 G St. Nw., Washington, DC 20550; tel. 202/357-7554.

Keyworth Discusses Details of '85 R&D Budget

Some of the fine details and policy designs in the Administration's latest R&D budget were spelled out February 1 in an hour-long press briefing by George A. Keyworth II, the President's Science Adviser. Following are segments from the question-and-answer period, edited by SGR for brevity and clarity:

●

Q. Are you asking for a limit on indirect-cost payment [for overhead expenses on federally supported research in universities] again this year?

A. No. We are paying considerable attention to the question of the health of universities. We're going to continue to work hard with university administration and faculty to try to better understand this increase in indirect costs. But we're not going to go through the exercise [of reducing reimbursement levels] that we experienced with NIH in the last several years.

Q. Does the budget contain funds for the renovation or rebuilding of on-campus research facilities?

A. There is considerable emphasis in all the agencies on new instrumentation. Those funds will be well in excess of $400 million next [fiscal] year. There is no particular program to address the decaying infrastructure.

Q. Why has the Administration tried every year to cut out NOAA's (National Oceanic and Atmospheric Administration) Sea Grant program for universities when you say that the health of the universities is a major concern?

A. First let me point out that we're spending about $4 billion on universities and your question is focusing on a program of about $50 million. We feel that the Sea Grant program has failed to capitalize on a number of enormously rich opportunities in applying biotechnology to marine science. We have been working closely with NOAA and the marine-science community to try to provide a stronger emphasis on the introduction of modern biotechnology. We feel in the Administration that the Sea Grants program is very much in an area that should be supported by American industry, and we are instead turning our efforts outside the Sea Grants program to trying to develop a new program in the pursuit of biotechnology in marine sciences—genetic manipulations, etc.

Q. What's the Administration's stance these days regarding federal funding for social-science research? [which, following sharp reductions in the Administration's first R&D budget, is yet to return to 1981 funding levels].

(Continued on page 3)

BUDGET *(Continued from page 1)*

research grants—a three-fold increase over the present sum for that politically sensitive program.

While previous administrations tended to equate science policy with just shoveling a lot of money in the direction of R&D-related activities, it must be said that Reagan Administration—like it or not—it has clearly delineated and faithfully pursued a science policy.

Without embarrassment, it has given top priority to vastly increasing expenditures for military R&D, which has more than doubled since Mr. Reagan took office. The Defense increases have included substantial sums for basic research in universities, in line with the Administration's desire to aid academe and mobilize its talents for Mr. Reagan's military and industrial crusades.

Meanwhile, funds for the government's civilian R&D agencies have remained approximately at the same $15-billion mark where they were four years ago. But the programs supported by that money have been radically changed in favor of basic research and against support of development and demonstration. The rationale is that not enough basic research would get done without direct government subsidy—and that it's important that the basic sciences flourish because of the knowledge and training they produce.

It is widely accepted that the President's deficit-laden election-year budget is bound to undergo big reductions as it passes through the legislative mill. But it would not be surprising if the civil portion of the R&D segment remained essentially unaltered; in fact, the overall sum is likely to grow a good deal, if only because of the increases that Congress is sure to provide in that standstill budget for NIH.

ISSN 0048-9581

Editor and Publisher **Daniel S. Greenberg** | Associate Publisher **Wanda J. Reif** | Circulation Manager **Margaret Lee**

Contributing Correspondents

Christopher Joyce (Washington); Francois Seguier (Paris); Ros Herman (London)

Independently published by *Science & Government Report,* Inc., twice monthly, except in January, July & August. Annual subscription: Institutions, $144.00 (two years, $255.00). Information about bulk and individual rates upon request. Editorial offices at 3736 Kanawha St. Nw., Washington, DC 20015. Tel. (202) 244-4135. Second-class postage at Washington, DC. Please address all subscription correspondence to Box 6226A, Northwest Station, Washington, DC 20015. SGR is available on Xerox University Microfilms. Claims for missing back issues will be filled without charge if made within six months of publication date.

...Aims for Big Increase in Agriculture Fund

(Continued from page 2)

A. Basically, the same as it has been in the past, with the exception that we have been looking quite carefully within the National Science Foundation's programs, and there is a substantial increase, carefully targeted into some areas where we feel we need to pay particular attention to the available data base. That emphasis is primarily on trying to find more scientific data, better awareness of what is going on within American industry and in other countries, and across the entire educational system—what kind of talent we will be training, what mechanisms and what emphasis American industry is placing on talent in their R&D investments. We have raised a lot of questions in the course of policy planning in the last year, a lot of data has been missing, both internally and internationally, and we have tried to give NSF the funds with which to try to carry out our and their policy responsibilities more effectively.

Q. With regard to the large increase that you're asking for funds for competitive grants in agriculture [from $17 million at present to $50 million proposed for fiscal 1985], what are you going to do to get it through Congress [where major expansion of the program has annually been thwarted]?

A. We have continued substantial dialog within the agricultural community, and we have found an enormous amount of support there, particularly within the agriculture industry. I believe there is increasing awareness in the Congress that we are not talking about frittering away money in laboratories with happy whitecoated people, but that we are instead offering an opportunity to revitalize probably the most significant single sector of the American economy.

Berkeley Materials Center

Q. Will the National Center for Advanced Materials, under construction at the Lawrence Berkeley Laboratory, include the synchrotron light source, as was originally planned?

A. The question of the light source is, of course, very much an open one. With the new budget, we will have proposed expenditures of $45 million for that center for research other than the light source. We have recently had a group take a look at facilities of this class specifically. But more broadly, I asked the National Academy of Sciences recently to assemble a body of material scentists and help us establish priorities across the full spectrum of major material requirements—$5 million and up. And we will see from that exactly where they recommend the synchrotron light to be. I might add that, in our formulation of this center, the synchrotron light source was not the particular thrust, was

(Continued on page 4)

New Starts in '85 Budget

Following are new or expanded R&D activities for which funds are included in the President's budget proposals for fiscal 1985:

●

• The National Science Foundation will provide $10 million for establishing a series of university-based "centers for cross-disciplinary research in engineering" related to industrial needs. With NSF support, the National Radio Astronomy Observatory will begin construction of what is expected to be the world's most advanced radio telescope, the Very Long Baseline Array. (The usual political problems of site selection won't be difficult in this case. According to an NSF announcement, "The array will contain individual antenna elements at fixed sites throughout the United States, ranging from Hawaii to Puerto Rico.")

• NSF will commence the second annual round of 200 appointments for Presidential Young Investigator Awards, which provide promising young science and engineering faculty members with joint government-industry research funds of up to $100,000 a year for five years.

• The Department of Energy will support exploratory research for a mammoth new particle accelerator, the Super Conducting Super Collider, and will finance construction of a Continuous Electron Beam Accelerator Facility, at Newport News, Virginia, and a heavy-ion accelerator at the Brookhaven National Laboratory.

• The National Bureau of Standards will make a modest debut, $3 million, in biotechnology—a subject that the Administration is pushing in other agencies, too. NBS' work will involve "development of a scientific base for the use of biotechnology in chemical production and related industries." NBS will also start construction of a cold neutron source for materials research.

• NASA will undertake three new flight projects: the Mars Geoscience/Climatology Orbiter, an Upper Atmosphere Research Satellite, and a Scatterometer Project, to be carried on a Navy satellite.

• NSF and DoE will collaborate in providing academic researchers increased access to large computers at national laboratories, and the two will join with the Defense Department in supporting additional research for the development of supercomputers.

...Study Goes Ahead for Super Accelerator

(Continued from page 3)

not a particular element. If it comes up as a required tool to carry out the mission for the Center for Advanced Materials, then we will, of course, thoroughly support it. But we are most delighted with the support and nature of that Center at the moment.

DOD Science Support

Q. There's a sentiment among some members of Congress to transfer some of the basic research funds allocated to DOD (Department of Defense) to non-defense agencies—in areas such as some of the basic computer-research programs, perhaps to NSF. What is your feeling about that?

A. I think it's mindless, blind, and potentially devastating. If we look at the health of American science and technology, as much as anything else, it depends on and comes from the plurality and multiple sources of funding. In fact, if we look hard, we find that the real strength of American science and technology was built largely by the DOD in the years preceding the Mansfield Amendment [of 1969] that virtually truncated DOD's basic research. I think you will find across American academia a general consensus to that end.

Q. What are the plans for the Super Conducting Super Collider (SCSC) accelerator? [under discussion as the next big machine for high-energy physics].

A. This is an enormous project. It will be the largest basic research project ever undertaken by any country. Nobody knows the full cost, but I can say with assurance—billions. The [high-energy physics] community has come to me over the last year and a half, and has said that if we proceed on this we must do it in a different way. No single university or laboratory comes close to possessing the capabilities to build such an enormous system. And we must draw upon the talents of industry and we must have an integrated national R&D program. That's exactly what the funds in the Department of Energy budget are for. We will build a national integrated R&D effort with industry, universities, and federal laboratories. Exactly who will manage it and how it will be structured will be announced in the next few months. There has been a superb degree of cooperation, in contrast to when I first came here. No one has proposed that we do any more [at this time.] We cannot possibly go to Congress right now with a project, because the first question is, "What project?"

(Continued on page 5)

Larder Bare for Columbia, Catholic Lab Buildings

There's no money in the budget for the laboratories for which Columbia University and the Catholic University of America cunningly obtained Congressional approval in science's most celebrated pork-barrel episode of 1983 (SGR Vol. XIII, 10, 19).

News of the empty account was joyfully reported to the House Science and Technology Committee February 1 by Presidential Science Adviser George A. Keyworth II, who seemed pained by the recollection of for-hire lobbyists getting at the federal R&D budget.

The Columbia and Catholic projects, which offended less nimble universities by circumventing peer review and going straight to the House floor, had aroused second thoughts in Congress. This, in turn, led to a requirement that the two hustling universities correct an odd omission: Neither had drawn up a specific proposal for shares of the $34 million that they sought from the Department of Energy.

In the absence of approved proposals, Keyworth told the Committee, there was no reason to budget funds for the buildings.

Checking into this matter at the Department, SGR got the impression that warm hospitality did not await the mandated proposals. It turns out that the two universities indeed had subsequently submitted proposals, as required by Congress, but that DoE had found them inadequate. The proposals never made it to peer review, according to a DoE official, who said that staff within the Office of Basic Energy Sciences concluded that the proposals "needed more work." They have been returned to the universities.

In regard to his own adventure in non-peer-reviewed institution building, the National Center for Advanced Materials (NCAM), at the Lawrence Berkeley lab, Keyworth, with a touch of anger, told a press briefing that, contrary to published reports, the project is alive and well. That's not the whole story, however.

After envious materials scientists in other labs complained to Congress that Keyworth had pushed through the $225-million proposal without peer review, retro-reviews were hurriedly put together. As a result, the biggest piece of NCAM, $180 million for a synchrotron light source, was sliced from the project, as was one of three laboratory buildings in Keyworth's original design. And "National" was quietly dropped from the title, leaving the residue labeled as merely the Center for Advanced Materials.

Now budgeted for $40 million in construction costs, it is not an inconsiderable undertaking. But it is surely not the grand National Center for Advanced Materials that Keyworth proposed last year—without peer review.—DSG

...Keyworth Defends Minor Increase for NIH

(Continued from page 4)

Q. Is the proposed ion facility at the Brookhaven National Laboratory a conversion of the canceled Colliding Beam Accelerator (CBA)?

A. Categorically, it is not. We are not converting the CBA to anything. Heavy-ion physics has been a potentially exciting field for more than 15 years, but one that hasn't quite caught on. Suddenly, the theory has reached a point where it has an enormous degree of excitement within the nuclear-physics and elementary-particle communities. We really feel it may likely provide a means to look at free quarks. We are fortunate enough to have at our fingertips an opportunity that no other country possesses. And that is to link the old Alternating Gradient Synchrotron at Brookhaven with the two tandem Van de Graaff accelerators that they have to reach the lower levels of the interesting regime. We can, with a very small expenditure, around $15 million, actually for the first time test the really exciting area of heavy-ion physics. This is potentially one of the most exciting scientific endeavors in the entire budget. But the effort at this point is to ask ourselves whether this field is as exciting as the potential would imply. If it is, and we will know the answer in a few years, then we will make a decision on building the next step, which will be a real accelerator. And certainly, Brookhaven will be a potential laboratory to be assigned that responsibility, but no more. There is no commitment, no implication here.

Parapsychology Research

Q. There have been denials of reports that defense and intelligence agencies have been involved in parapsychology research to match activities in the Soviet Union. Can you tell us if there's anything to those reports?

A. [a 5-second pause] Let me say this only, and that is that in our pursuit of research in the really critical areas of military technology, we do our very best to let our imaginations and our creativity be as effective as possible. We pay attention to Soviet programs, and no areas are going to be clearly rejected on parochial grounds. But as far as whether any of the intelligence agencies, or DOD particularly, spend money on this, I cannot comment.

Q. Do you know?

A. Yes, I do know.

Q. You are leaving the implication that they are [spending money on parapsychology research]. Do you intend to do that?

A. If I say that the moon is made out of green cheese, you might accept an implication on this subject. The fact is, we try to let our bounds go as far as possible, and I cannot comment on the particular question specifically.

Q. Why was the inertial-confinement fusion program cut?

A. I was a very strong supporter of that cut. The program was a very exciting opportunity for a new approach to fusion back in the early '70s, when it began. Since that time, it has been characterized by an enormous emphasis on facility-building, a momentum that has been fueled by Congress, and we have built large laser after large laser after large laser, with virtually no attention to asking ourselves whether we have improved our understanding of the basic science so that we can intelligently say whether this is a reasonable alternative. At this point, because of research in the US and other countries, it is very unlikely that inertial fusion represents a viable competitive approach to fusion.

NIH Budget

Q. Explain why the Administration has requested only minor increases for NIH in recent years while substantially increasing the budgets of other agencies that support academic research?

A. What do we have with NIH? We probably have as fine a research-sponsoring establishment as there is in the federal government. We also have what I think is indisputably the most exciting single discipline in the sciences today. However, the support of NIH has traditionally been motivated by concerns over health care and health research. My concern, and I speak personally, is that there has been great difficulty in communicating to the Congress the importance of the generic life-science research that is carried out by NIH for the entire future of this country—in health care, yes, but also in a major area of economic expansion through biotechnology. I find it extremely problematical when we look at the number of young people that have been coming into the biological sciences, and I compare it with other areas at their absolute peak of vitality. And it's not commensurate. We have a problem. And we have a communication problem here. What you have seen in these budgetary exercises has been symptoms of that communications problem. This year, you're seeing something different, a modest increase in NIH and virtually all of it is going into the basic research compo-

(Continued on page 6)

Stanford Arms-Control Grant

The Carnegie Corporation has awarded Stanford University $906,000 for arms-control studies. The award comes out of a $5-7-million a year program recently initiated by the New York foundation. The Stanford grant will support projects headed by Sidney Drell, Professor of Physics, and George Alexander, Professor of Political Science.

...France: "ESPRIT" Delayed and "Sniffer" Tales

Paris. The familiar script of grand ambitions followed by politically enfeebled performance is being followed in Europe's latest grandiose scheme to pool its research resources. In this case, the focus is on electronics, a field in which Europe plays a distant third to Japan and the United States. As a consequence of recent events, the odds are that the distance will be growing.

Calls for a combined research effort by the Common Market countries had coalesced into agreement last year on a $750-million, five-year European Strategic Program of Research in Information Technology, known as ESPRIT (SGR Vol. XIII, No. 12). With especially strong backing from President Mitterrand, ESPRIT was intended to stimulate American-style collaboration between universities and industry. The aim was generic, "pre-competitive" research that would benefit all, without getting into the thickets of proprietary interests.

Upon assuming the rotating presidency of the Common Market recently, Mitterrand assigned special importance to getting on with the program. But, alas, Britain and West Germany—the current leaders in European electronics—suddenly decided to hold back on their share of the $175 million originally planned for launching ESPRIT. They needed the money for price supports for their wondrously overproductive, and politically powerful, farmers.

To avoid abandonment of the project, the father of the program, Etienne Davignon, Commissioner for Industry at the European Economic Commission, dredged up $35 million for electronics research and another $20 million for an information-technology project. Mitterrand remains hopeful that he can persuade the British and Germans to look beyond their bountiful harvests to Europe's looming industrial catastrophe.

Meanwhile, ill-will between Mitterrand and his predecessor, Giscard d'Estaing, has been enlivened by the preposterous saga of the "sniffing airplanes," a $100-million-plus extravaganza about which bits and pieces continue to emerge.

A cross between a C.P. Snow drama and a Marx Brothers comedy, the sniffer story is painful for the figures involved. But the public is pleased, as usual, by revelations of extreme foolishness in high places. The affair, which was uncovered by the press, mainly occurred during Giscard's regime, and is therefore a considerable source of embarrassment to his entourage and his own ambitions for a political revival. But the rippling effect has been so extensive that Mitterrand's team has not escaped suspicion.

To grasp the whole affair in detail would require an excursion through a maze of European institutions and French sociological peculiarities. But, in its essentials, the affair boils down to the following:

In 1976, France's principal oil company, the mainly government-owned Elf-Acquitaine, was approached by a Swiss financial group that portrayed itself as well-heeled, influentially connected, and in possession of an extraordinary "invention": An airborne device that could detect oil and other mineral resources. The inventors were said to be an Italian electronics engineer, Aldo Bonassoli, and a Belgian count, Alain de Villegas.

The stakes were high, since the promoters claimed that the so-called sniffer was so sensitive that, with a few minor adjustments, it could detect deeply submerged submarines. That subject, of course, is of great interest to the French government, which has invested heavily in a fleet of missile-bearing subs.

(Continued on page 7)

KEYWORTH *(Continued from page 5)*

nent, and into just a few areas—such as cell biology and neurophysiology. What we're trying to do is start a clear dialog with Congress in discussing the importance of this. NIH and the management and direction-setting of NIH should be far beyond the establishment of new institutes for some disease that happens to be favored or from which some legislator happens personally to be suffering. The "disease-of-the-month" syndrome is no longer a joke. We are compromising our own nation's ability to capitalize on what may perhaps be the most rapidly growing single area of science there is. We hear these enormous numbers—a $100-billion industry at the end of the century—and we stand possibly threatened in our ability to capture this because of lack of talent. I think over the next few years, we will see a very healthy dialog with the Congess. I think we had a very healthy dialog with the Department of Health and Human Services during the last year.

Q. Does that mean that this year and in the future, you're going to press for more basic research at NIH?

A. Correct. NIH, because of the strong technical management that they have had for many years, has made heroic efforts to insure support for the really exciting areas that Congress had not traditionally been terribly enthusiastic about. These areas have grown very rapidly. My concern is that they have not grown as rapidly as they should have. Neurophysiology is an excellent example. It does not have perhaps the obvious public connections that an institute for arthritis would have. On the other hand, few people with any scientific awareness at all would dispute that neurophysiology is right up at the very apex of the life sciences. I'd go so far as to say it's possibly the most exciting of any of the life sciences.

...Elaborate Hoax Unveiled by Physicist

(Continued from page 6)

In deep secrecy, astronomical amounts of money, on the French scale of R&D—at least $100 million, with another $110 million in the pipeline—were given to the "inventors." This was done without any verification of the financial group that claimed to be backing them or any attempt to check the scientific validity of the "physics" on which their equipment was based. The reason was that for several months, Elf's top management, the President of the Republic and the Prime Minister were the only outsiders who were aware of the project and the vast expenditures—and, in the interest of secrecy, they didn't seek the advice of scientists or engineers.

So, how were these political and industrial luminaries to know that Bonassoli was a jack of all trades, while his partner had a track record as a society swindler? Europe is always eager to open its doors for those who possess the endorsement of Switzerland's largest bank.

After a few months of disappointing tests of the sniffer, Elf sent two young researchers to look into the "laboratory" of the inventive pair. The visitors were advised that the sniffer employed a neutrino-type particle, known only to the inventors, along with gravitational waves. They promptly informed their bosses that the claimed invention was a ridiculous hoax, but that wasn't sufficient to disturb the gullibility at the top. Things had gone so far that it was necessary to have a change of ministers to put a stop to the adventure.

That came in 1978, with the appointment of a new Minister of Research and Industry, Andre Giraud, who formerly headed the Atomic Energy Commission. Informed of the sniffer program, he assigned the Commission's chief of basic research, Jules Horowitz, a magnetism specialist, to investigate this increasingly strange entrprise. Horowitz unmasked the fraud within a few minutes.

Told that the sniffer could detect a metal bar behind a solid wall, Horowitz secretly bent the bar. He was presented with a photocopy of an unbent bar. Further investigation revealed prior preparation of photocopies of geological cross-sections supposedly produced by the sniffer.

The whole affair collapsed at that point. Further funding was canceled and some money was actually recovered but over $100 million was gone forever.

Giscard and his colleagues responded to these humiliating events by simply hushing up the whole affair. They kept the lid on for five years, but the story was too big and juicy to remain out of sight forever. When it did burst forth, thanks to a leak to the satirical weekly *Le Canard Enchaine,* all sorts of passion gushed forth.

Giscard and his followers accuse Mitterrand and his followers of calumny and disregard of the military and economic sensitivities that, they claim, inspired their secrecy efforts. The Mitterrand government can properly point out that the costly foolishness took place prior to its election, but that still leaves the question of why it took so long to reveal the affair.

And then, for those who wish to look for lessons in the sniffer drama, there's the subject of what it says about science-and-government relations. As in other industrialized nations, the government is surrounded by a variety of scientific and technical advisers, none of whom, in this case, it called in until very late—FS

In Print

Science Indicators 1982, An Analysis of the State of US Science, Engineering, and Technology, sixth in a series published biennially by the National Science Board, the policymaking body of the National Science Foundation; contains a vast accumulation of R&D statistics and related information.

The utility of *Indicators* is unfortunately diminished by patches of inexcusably out-of-date statistics, eg., page 192, 1979 budgets for international comparisons of R&D expenditures. (A call to the Washington embassies of the countries involved easily produces far more timely information.)

Nonetheless, *Indicators* is clearly the best available one-volume collection in the subject area, and is therefore an indispensable work for science-policy makers, commentators, and fans. No fault of its compilers, the latest edition reflects the dearth of conceptual progress in qualitative assessment of R&D activities; as with its predecessors over the past decade, the new *Indicators* performs well in counting up what goes into R&D, but, apart from the customarily unrevealing tables on patents and citation analysis, tells little about the economic and social effects of what comes out.

What's plain is that this series, useful as it is, is going stale and needs some serious rethinking.

(344 pages, no charge, available from National Science Board, 1800 G St. Nw., Washington, DC 20550.)

*

Nuclear Power in an Age of Uncertainty, report by the Congressional Office of Technology Assessment, concludes that "the difficulties with this technology are not insurmountable," and that with technological improvements, a restoration of public confidence, and an upturn in electricity demand, nuclear power might come off its death bed.

(293 pages, $10, Stock No. 052-003-00941-2, Superintendent of Documents, USGPO, Washington, DC 20402.)

Budget Notes: National Labs, Space Spending

On February 1, carrying out what's become an annual ritual in which the President's Science Adviser, on the day the budget is released, testifies as a solo witness before the House Science and Technology Committee, Adviser George A. Keyworth made the following points:

●

On national laboratories:

"We really are wrestling with an issue here of a mission whose clarity and clear definition has simply dwindled over a period of 30 to 40 years, in most cases...The laboratories have been micro-managed disastrously. I would look at the DOE laboratories, in particular, and say that...they have been micro-managed to a point where much of the capability has been constrained. I believe that everyone is agreed that we should allow more autonomy to the laboratories, that we should give the directors more responsibility, and I feel very strongly myself that they should have, as Dave Packard [of Hewlett-Packard, Chairman of a White House Science Office study of the national laboratories] recommended, that they should have a substantial sum—5 to 10 percent—of their overall funds available for the directors' discretionary use.

"Discretionary, mind you, does not mean without very careful controls and oversight. What we are talking about is giving the director an opportunity and holding him very strongly responsible. But I would certainly emphasize that when we are talking about one-sixth of the entire public plus private sector R&D in this country combined, and more than that, in terms of the fraction of the technical talent of this nation...I think it is absolutely urgent that we use this immense capability far, far better than we have."

●

On severe fluctuations in support of space sciences:

"We all know that the [space] scientists are reeling from the period of '72 and '82, when increasing costs of the space shuttle terminated many important science projects and we saw space science go largely into a single area, planetary exploration. They are reeling from that, and they have good memories and they fear, as I do, this roller coaster. I point to the budget that we submit today, and note that not only have we taken a major new start, in the space station, but we have also provided important new strength... We have a strong astronomy program...It is strong for many years to come... Planetary exploration is very healthy. Now, we have taken a step to strengthen the third, so-called solar-terrestrial science. I think we have very health [space] science. I think we all must work hard to maintain that so that the fears that Tom Donahue [Chairman of the National Academy of Sciences Space Science Board] doubtless represents are not justified."

●

On the R&D budget for "Star Wars" defense:

"Where are the funds coming from? We have spent a substantial sum of money—more than $1 billion a year recently—on missile-defense technologies, and my point was that we wished to coordinate it into a broad program to meet the objectives that the President outlined in his ['Star Wars' speech last March]...That has not been the nature of that program in the past...I think we can take money out of some of those programs to make a better-coordinated program. It's not [coming] out of other R&D areas. Where are we going specifically? We will perhaps now be submitting a proposal for a coordinated program with an overall increase of about $250 million, and it will be allocated in a way that will resemble the [James C.] Fletcher [former NASA Administrator] Committee report—that several different technologies must be pursued. Priorities will be identified that will be far more clearly delineated than in the Fletcher Report."

Science & Government Report
Northwest Station
Box 6226A
Washington, D.C. 20015

Second class postage paid at Washington, D.C.